

A scenic landscape photograph showing a vast, green grassy field in the foreground. In the middle ground, there are rolling hills with patches of green grass and some evergreen trees. In the background, a range of mountains is visible under a clear blue sky with a few wispy clouds. The overall scene is bright and sunny.

*Exploring the Potential for
Ecosystem Services on
Colorado State Trust Lands*



Colorado State Land Board Five Year Strategic Plan

“Fully realize the vision of Colorado’s citizens, as expressed in Amendment 16, for stewardship of the lands we hold in perpetual trusts.” (Goal 2)

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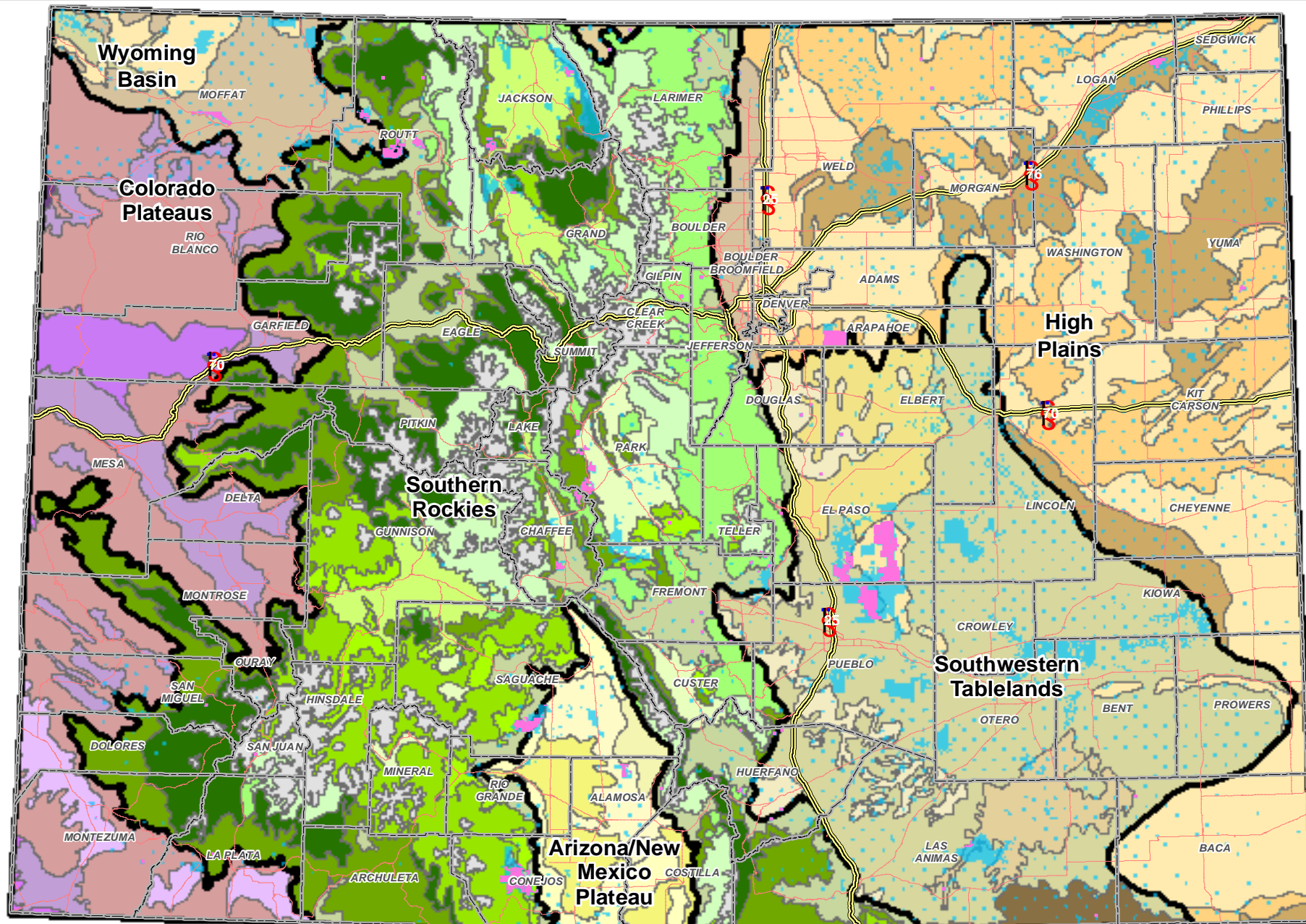
Colorado State Land Board Five Year Strategic Plan

Strategic Objective: Develop creative and diverse ways to produce income from conservation and conservation services.

- *Establish three pilot projects to test prospects for adding value to trustlands through marketing compensable ecosystem services.*
- *Generate \$10 million (including land exchange, conservation easements, new lease revenue).*

The Stewardship Trust:
300,000 acres of 2.88 million acres





- SLB Surface Ownership
- Designated Stewardship Trust

Ecoregions of Colorado and State Trust Lands

0 5 10 20 30 40



Wetland Mitigation Credits: Fen & Wetland Complex, Park Co



Same wetland system,
channeled and drained

Natural fen wetland
system

Stream Mitigation

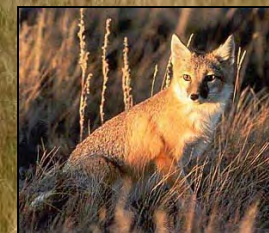


Wildlife Mitigation: Species of the Prairie Ecosystem

The habitat created by 1,000 acres of prairie dogs provides, each year:



- Nesting homes for 200 pairs of Burrowing Owls
- Nesting habitat for 28 pairs of Mountain Plovers
- Food to sustain one Black-Footed Ferret family
- Food for 12 raptors
- Food for four pairs of Swift Fox, Red Fox or Coyotes



www.fws.gov



- (assuming 10 prairie dogs per acre for an estimated total population of 10,000 prairie dogs)

Eparks.org

Regeneration of the Mt. Saint Helens Ecosystem



Purplepurple.com

“Evidence of another survivor, the northern pocket gopher, could be detected by helicopter. “You could see these beautiful, deep dark rich forest soil mounds on top of this bleak, light gray ash. As they burrowed, the gophers churned up plant debris and microbes essential for building soil. The mounds caught windblown seeds. And when returning elk stepped on gopher tunnels, they created amphibian refuges.

Source: Smithsonian Magazine, Evotourism article, January 2012.

10-acre meadow of Meadow Brome, Durango, CO



Weed fighting bacteria

**Cheatgrass / Downy Brome
(*Bromus tectorum*)**



Pseudomonas fluorescens strain D7

Yellow winter wheat



Four Major Categories of Ecosystem Services:

Benefits that people obtain from ecosystems

Provisioning Services (Food, water, fiber, and fuel)	Regulating Services (Climate regulation, water, disease)	Cultural Services (Spiritual, aesthetic, recreation and education)	Supporting Services (Primary production, soil formation)
<p>Natural medicines and pharmaceuticals</p> <p>Food and Fiber (supports livestock and game)</p> <p>Fresh Water (the mountains are the sole or main source of fresh water for the Front range). Changes in climate variability and land use can lead to degradation.</p> <p>Fuels (Minerals, timber)</p> <p>Genetic resources</p>	<p>Erosion control (managed to minimize erosion)</p> <p>Water purification (high rate of water infiltration)</p> <p>Water regulation (Mountain ecosystems regulate the timing of snowmelt, timing and magnitude of runoff and floodwater thereby regulating water quantity and quality). groundwater recharge)</p> <p>Natural Hazard mitigation (intact floodplains; fires, avalanches)</p> <p>Climate regulation (carbon sequestration)</p> <p>Air Quality</p> <p>Pollination (habitat for pollinators)</p> <p>Biological Control</p> <p>Disease prevention</p> <p>Pest regulation</p>	<p>Recreation and hunting</p> <p>Ecotourism</p> <p>Aesthetic values (visual)</p> <p>Sense of place (unique landscape, serene)</p> <p>Educational values (sustainable agriculture, natural systems)</p> <p>Inspiration</p> <p>Knowledge systems</p> <p>Cultural heritage (ranching lifestyle)</p> <p>Social relations (ranching culture)</p> <p>Cultural diversity</p> <p>Spiritual and religious</p>	<p>Biodiversity support (sensitive species habitat, diverse habitats)</p> <p>Nutrient management (nutrient cycle intact)</p> <p>Photosynthesis (supports O2 producers)</p> <p>Primary production (grasses, wetland algae, are dominant)</p> <p>Soil formation (retains soil when vegetated)</p>

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No Existing Market (Yet)		<p>Pollination (habitat for pollinators)</p> <p>Biological Control</p> <p>Disease prevention</p> <p>Pest regulation</p>	<p>Knowledge systems</p> <p>Cultural diversity</p> <p>Spiritual and religious</p>	<p>Nutrient management (nutrient cycle intact)</p> <p>Photosynthesis (supports O₂ producers)</p> <p>Primary production (grasses, wetland algae, are dominant)</p> <p>Soil formation (retains soil when vegetated)</p>